RÉSUMÉ DE THÈSE

Compared ecology and rational exploitation of two populations of *Haplochromis* spp. (Teleostei, Cichlidae) of lakes Ihema and Muhazi (Rwanda) par Pierre-Denis Plisnier, Unité d'Ecologie des Eaux Douces, Facultés Universitaires Notre-Dame de la Paix, Rue de Bruxelles, 61, B-5000 Namur, Belgique.
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The first objective of this work is to compare the main ecological characteristics (habitat, reproduction, diet, growth and population dynamics) of two populations of *Haplochromis* spp. which are probably endemics in lake Ihema (90 km^2) and lake Muhazi (34 km^2) in Rwanda. Those fish populations whose morphologies are very close together, might be one or two new species of *Haplochromis* spp.. The problem of conspecificity is dealt with from an ecological point of view. *Haplochromis* "Ihema" seems ecologically very close to the subgenus *Haplochromis (Gaurochromis)*.

Haplochromis "Ihema" is mainly a benthic population which represents 8% of the sampled ichtyomass. Its food is composed essentially of insect larvae and pups of the dipterians *Chaoborus* spp. The predation of those insects occurs mainly during their vertical migration in the morning when they come back to the bottom of the lake and during the day time too when the insects are laying on or buried in the bottom mud. The fecundity is low (average of 109 ovules). Reproduction occurs all over the year. The growth coefficient K is 1.132. Asymptotic size L∞ is 147 mm. The instantaneous coefficient of natural mortality is 4.8. Total production is 0.662 g by recruit.

Haplochromis "Muhazi" dominates the ichtyomass of lake Muhazi (78% by weight). This population lives in different areas of the lake excepted the anaerobic bottom below 4-6 meters. The diet is omnivorous and shows a marked switch during the day. Insects larvae and pups of *Chaoborus* and Chironomidae are preyed mainly in the morning and in the evening while phytoplankton is consumed during the day time. Fecundity is very low: 24 ovules (in average). They weight 10% more than those of *Haplochromis* "Ihema". The brooding efficiency is high. It reaches 70%. Reproduction is continuous through the year and shows no marked peaks. The growth coefficient K is 1.139. Asymptotic size is L∞ 117 mm. The instantaneous coefficient of natural mortality is 6.3. Total production is 0.570 g by recruit or 74 kg/ha/year.

The second objective of this work deals with the determination of the maximum sustainable yield of those populations of *Haplochromis* spp.. Those fishes are very abundant in lake Ihema and Muhazi but almost unexploited now. The exploitation with a surrounding net has successfully started in lake Muhazi since 1988. A unit composed of 5 fishermen catches an average of 15 tons/year. The possible extension of this fishing technique might occur in several lakes in Rwanda. Experimental fishing in ten lakes of Rwanda has shown that *Haplochromis* represents an average of 45% of the ichtyomass sampled in those lakes. Those fishes represent an important potential to raise the production of animal proteins in Rwanda. Actual production of *Haplochromis* "Muhazi" is sold grinded. This fish flour is sold at a price 2.5 lower than *Tilapia* and 4 times lower than meat. More than 30 tons of *Haplochromis* "Muhazi" have been commercialized in two years.

The maximum sustainable yield has been calculated using the methods of Ricker (1980) and Beverton and Holt (1957). MSY equals 0.39 g by recruit in lake Ihema and 0.34 g by recruit in lake Muhazi. Assuming a fishing mortality equal to the natural mortality and for a size at first catch of 55 mm, MSY for the lake is evaluated at 24 kg/ha/year. The maximum sustainable yield of lake Muhazi is evaluated at 84 tons/year. This production could be caught by 6 units of 5 fishermen. A first evaluation of *Haplochromis* "Ihema" maximum sustainable yield is 47 tons/year.